

**WHAT DOES FORTUNE 500 TURNOVER MEAN?**

Dane Stangler and Sam Arbesman  
Ewing Marion Kauffman Foundation

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## Executive Summary

In *The Princess Bride*, the lead kidnapper, Vizzini, dismisses missteps in his ill-fated scheme with a frustrated exclamation, “Inconceivable!” At length, his soft-spoken mercenary, Inigo Montoya, ventures: “You keep using that word. I do not think it means what you think it means.”<sup>1</sup> An equivalent asymmetry in the world of economic analysis is the use of turnover on the Fortune 500 list. For years, many people have cited turnover—and ostensibly rising turnover—as a proxy for positive economic churn and rapid changes in the U.S. economy that are supposed to reflect underlying strengths in innovation and productivity.

We find that, while annual turnover on the list has, on average, increased since the early 1980s, it doesn’t quite mean what many people think it means.

On average, annual turnover (the number of spots on the list that change as companies enter and exit the top 500) was moderate in the late 1950s, then lower and steadier through the 1960s and 1970s. Beginning in the early 1980s, annual turnover rose to historically high levels; by the second half of the 1990s, it touched new highs. After 2000, however, turnover returned to the moderate levels of the late 1950s. It’s easy to paint a narrative around these numbers that coincides with the Great Moderation and the productivity revolution of the 1990s and early 2000s. But reality isn’t so simple.

For one thing, turnover among big companies is not a new phenomenon. The late 1950s, as mentioned, experienced moderately high levels of turnover (at least compared to subsequent periods). Prior research has revealed considerable churn among big companies in the early decades of the twentieth century as well. Higher turnover in the 1980s did appear to reflect value creation as corporate conglomerates, ravaged by inflation and competition, were taken apart and remade into separate, more efficient companies. But, in the 1990s, higher turnover reflected (a) methodological changes in how the *Fortune* list was compiled, and (b) a mergers and acquisition boom, concentrated in a handful of sectors, that destroyed perhaps as much value as it created. Turnover is less a broad economic trend than a discrete temporal and sectoral phenomenon.

Still, we point out that the Fortune 500 list—and its changes over time—does provide a meaningful window into American capitalism, even if it doesn’t mean what many think it means. It reflects a kaleidoscopic process of sectoral change and greater efficiencies at the level of individual firms, as well as some less sanguine economic developments. The latter includes the downside of higher volatility—the high M&A volume in the late 1990s included the largest number of the worst deals of the past thirty years—and the deleterious implications for consumers and households. Finally, it appears as if performance among the Fortune 500, as measured by return on equity, did not necessarily improve and, if anything, became more volatile over time.

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<sup>1</sup> *The Princess Bride* (1987), at <http://www.imdb.com/title/tt0093779/quotes>.

## I. Overview and Background

Out of approximately six million firms in the United States, less than one percent is publicly traded and an even smaller number, roughly 5,000, is traded on exchanges such as the New York Stock Exchange and NASDAQ.<sup>2</sup> This comparatively small number, however, plays an outsized economic role—by some estimates this fraction of companies employs nearly one-third of the American workforce.<sup>3</sup> These are the businesses with which we all interact on a daily basis: McDonald's, Apple, Exxon Mobil, Target, and so on. Their economic heft means that economists and commentators rightly pay a great deal of attention to changes among the ranks of publicly held companies: growth, shrinkage, mergers and acquisitions, initial public offerings, and so on. The relative stability or volatility of publicly traded firms is an important economic gauge.

Here, we look at one popular measure—turnover on the Fortune 500 list. We find that, as others have claimed, annual turnover has on average risen over time. We set this turnover in historical context and look into various possible causes for this rise, from economic change to methodological explanations. We conclude that Fortune 500 turnover offers a window into the marvelously complex ways that capitalism works, but the use to which many have put it as an economic indicator is overdone.

Every spring since 1955, *Fortune* magazine has published a list of the largest public companies, by revenues, in the United States.<sup>4</sup> The Fortune 500 (and 1,000) list has become a barometer of sorts, treated by many as a touchstone of economic change writ large.<sup>5</sup> One salient feature of the list is annual turnover: while most of the list remains stable from year to year, a crop of different companies appears each time and, accordingly, other companies drop off. Such turnover is internal to the list itself: the fact that a company is ranked within the top 500 one year but not another doesn't mean the company has gone out of business. In some cases, of course, a company has imploded or filed for bankruptcy. It might also be the result of merger, acquisition, being taken private, or simply falling below the rank of 500 relative to the performance of other companies.<sup>6</sup>

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<sup>2</sup> The six million figure includes only *employer* firms, those that, naturally, have employees. The population of “nonemployer” firms and the self-employed is roughly six times as large. See Small Business Administration, *The Small Business Economy*, at <http://www.sba.gov/advocacy/849/6282>.

<sup>3</sup> See Steven J. Davis and James A. Kahn, “Interpreting the Great Moderation: Changes in the Volatility of Economic Activity at the Macro and Micro Levels,” *Journal of Economic Perspectives*, vol. 22, Fall 2008, pages 155-180.

<sup>4</sup> The *Fortune* methodology is explained here: <http://money.cnn.com/magazines/fortune/fortune500/2011/faq/>.

<sup>5</sup> For an original take on what the Fortune 500 list means, see the interesting report from the Partnership for a New American Economy, “The ‘New American’ Fortune 500,” June 2011, at [http://www.nyc.gov/html/om/pdf/2011/partnership\\_for\\_a\\_new\\_american\\_economy\\_fortune\\_500.pdf](http://www.nyc.gov/html/om/pdf/2011/partnership_for_a_new_american_economy_fortune_500.pdf).

<sup>6</sup> *Fortune* acknowledges as much on its website: “Since 1955, when the first FORTUNE 500 was created, more than 1,800 companies have appeared on the list. Many of these companies have changed names over this period, owing to mergers, acquisitions, and bankruptcies. Other companies have gone private, or simply changed their names.” See [http://money.cnn.com/magazines/fortune/fortune500\\_archive/full/1955/index.html](http://money.cnn.com/magazines/fortune/fortune500_archive/full/1955/index.html).

Much amusement is derived from comparing Fortune 500 lists today to those of the 1950s and 1960s, when companies like American Can, Youngstown Sheet & Tube, and RCA bestrode the U.S. economy. Not surprisingly, changes in the composition of the list have followed broader economic changes. In particular, turnover and how it rises or falls over time is taken as indicative of these macroeconomic changes. Yet the turnover estimates vary among commentators, both in the basic numbers and in how much meaning to ascribe to them. Here, for example, is a sampling of claims regarding Fortune 500 turnover from a basic Google search:

- “In the 1980s it took just five years for one-third of the Fortune 500 to be replaced. And in the 1970s it took the entire decade to replace the Fortune 500. By contrast, in the 1950s and 1960s it took two decades.”<sup>7</sup>
- “In the 1960s, fewer than 10 new businesses were added to the Fortune 500 list each year. Today, there are 50 per year. In other words, eight of America’s 25 biggest firms today did not exist or were very small in 1960.”<sup>8</sup>
- “[I]t took 20 years to replace one third of the Fortune 500 companies listed in 1960, against four years for those listed in 1998.”<sup>9</sup>
- “Two-thirds of the original 1955 list was gone within three decades.”<sup>10</sup>
- “The rate at which large American companies left the Fortune 500 increased four times between 1970 and 1990.”<sup>11</sup>
- “One simple measure of marketplace turmoil is the annual turnover in the Fortune 500. ... Close to twice as many companies were replaced between 1998 and 1999 as were between 1958 and 1959. This is a coarse measure, to be sure, and may understate the current pace of change.”<sup>12</sup>
- “If change was as easy as a directive, then the companies that made 1999’s Fortune 500 list would not need to say goodbye to 238 of their peers a mere 10 years later, a change of almost 50% from the 1999 Fortune 500 to the 2009 Fortune 500. MIT Sloan School of Management professor, Peter Senge, presents the average life of a Fortune 500 company is [sic] 30 years. Jim Collins, author of *Built to Last*, notes only 71 companies on the original 1955 Fortune 500 list are there today.”<sup>13</sup>
- “Between 1998 and 2004, the turnover of Fortune 500 companies has been

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<sup>7</sup> David Audretsch, *Innovation and Industry Evolution* (MIT, 1995).

<sup>8</sup> Pieter Waasdorp, “Innovative Entrepreneurship: A Dutch Policy Perspective,” in Ministry of Economic Affairs, *Entrepreneurship in the Netherlands: Innovative Entrepreneurship. New Policy Challenges!* (2002), at <http://www.ondernemerschap.nl/pdf-ez/A200112.pdf>.

<sup>9</sup> Commission of the European Communities, *Green Paper: Entrepreneurship in Europe* 9 (2003), at [http://eur-lex.europa.eu/LexUriServ/site/en/com/2003/com2003\\_0027en01.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/com/2003/com2003_0027en01.pdf).

<sup>10</sup> See William Shanklin, “Fortune 500 Dropouts,” *Strategy & Leadership*, vol. 14, p. 12 (1986).

<sup>11</sup> John Micklethwait and Adrian Wooldridge, *The Company: A Short History of a Revolutionary Idea* 129 (Modern Library, 2005).

<sup>12</sup> John D. Donahue and Richard J. Zeckhauser, “Government’s Role When Markets Rule,” in John D. Donahue and Joseph S. Jr. (eds.), *Governance Amid Bigger, Better Markets* 282, 289 (Brookings, 2001).

<sup>13</sup> Toby Elwin, “The Cost of Culture, a 50% Turnover of the Fortune 500,” 2010, at <http://www.tobyelwin.com/the-cost-of-culture-a-50-turnover-of-the-fortune-500/>.

staggering.”<sup>14</sup>

- “A full one-third of the companies listed in the 1970 Fortune 500, for instance, had vanished by 1983—acquired, merged, or broken to pieces.”<sup>15</sup>

In each of these sources, Fortune 500 turnover is treated as a proxy for innovation, productivity, and, generally, that things are improving all around. These claims are repeatedly, and uncritically, cited elsewhere, but it is difficult to ascertain how some of these calculations were made, or even what some of them mean. They range from interesting and verifiable, to irrelevant and potentially meaningless.

With data provided by Ben Fry and the data analytics team at Fathom,<sup>16</sup> we set out to test such claims by calculating annual turnover—what have been some trends over time? More importantly, we also explore the meaningfulness of this turnover—economists look at all sorts of figures for insight into the economy, with disputes over what indicators actually mean.<sup>17</sup> Taking into account its magnitude and the knowledge that such turnover is internal to the list itself, how much can and should we rely on *Fortune* list turnover as an economic indicator? None of this is meant to detract from the *Fortune* list itself—it is full of information about how the United States economic structure has evolved.<sup>18</sup> But it is probably difficult to sum up anything about the list in one number alone.

## II. Descriptive Statistics of Fortune 500 Turnover, and Historical Perspective

We start with basic presentation of the number of companies annually turning over in Figure 1. We exclude 1994 because *Fortune* altered its methodology in that year and, as a reflection of how the U.S. economic landscape was changing, began including service firms, not just industrials, energy, and manufacturing. As a result, roughly half of the list “disappeared” that year (more on this below). This chart captures the difference

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<sup>14</sup> Bob Paladino, *Innovative Corporate Performance Management: Five Key Principles to Accelerate Results 2* (Wiley 2011).

<sup>15</sup> Arie de Geus, *The Living Company 1* (Longview, 1997).

<sup>16</sup> See <http://fathom.info/fortune500/>. The Fathom visualization allows you to sort the *Fortune* list by rank, revenue, and profit as well, which produces a fabulous picture of the within-list distribution of actual company performance. We made our own changes to the Fathom dataset because cosmetic tweaks to companies on the list, such as name changes, were sometimes wrongly counted in that visualization as instances of turnover. We have tried to be thorough in exercising editorial discretion over the data to catch such discrepancies.

<sup>17</sup> See, e.g., Adam Davidson, “What Nail Polish Sales Tell Us About the Economy,” *New York Times Magazine*, December 14, 2011, at <http://www.nytimes.com/2011/12/18/magazine/adam-davidson-economic-indicators.html>; Adam Davidson, “Why Do We Still Care About the Dow?” *New York Times Magazine*, February 12, 2012, at [http://www.nytimes.com/2012/02/12/magazine/dow-jones-problems.html?\\_r=1&ref=itseconomy](http://www.nytimes.com/2012/02/12/magazine/dow-jones-problems.html?_r=1&ref=itseconomy).

<sup>18</sup> Three years ago, we looked at the founding dates of current Fortune 500 companies, information which perhaps told a more interesting and useful tale of the American economy. See Dane Stangler, “The Economic Future Just Happened,” Kauffman Foundation, June 2009, at <http://www.kauffman.org/uploadedFiles/the-economic-future-just-happened.pdf>. Of course, founding date information also can be used erroneously—at a conference a few years ago, one attendee claimed that three-quarters of the current Fortune 500 list companies did not even exist (let alone make the list itself) before 1965, a claim which is just plain wrong.

between two consecutive annual lists—some companies drop off the list and then reappear several years later, so a simple tally of annual turnover includes these repeat appearances.

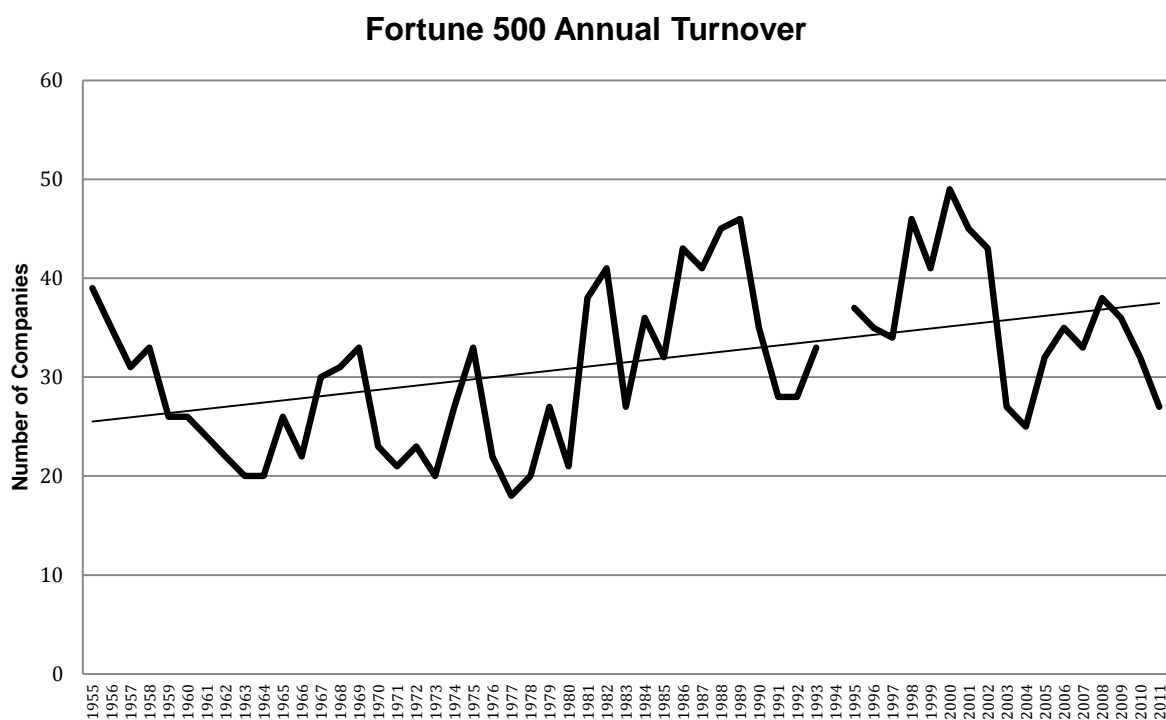


Figure 1. Source: Authors' calculations from Fortune 500, at <http://money.cnn.com/magazines/fortune/fortune500/2011/index.html>.

As a *prima facie* matter, we can certainly see an apparent secular rise in annual turnover, with the early 1980s marking a decided inflection point, both in the level of turnover and its year-to-year volatility. This is followed, after 2002, in a slight fall. The overall trend for the 2000s, in fact, is downward, paralleling the 1960s and 1970s more than the 1980s and 1990s.

Next, Figure 2 illustrates change over time of specific list years and clearly shows an accelerating rate at which turnover occurs within the Fortune 500.

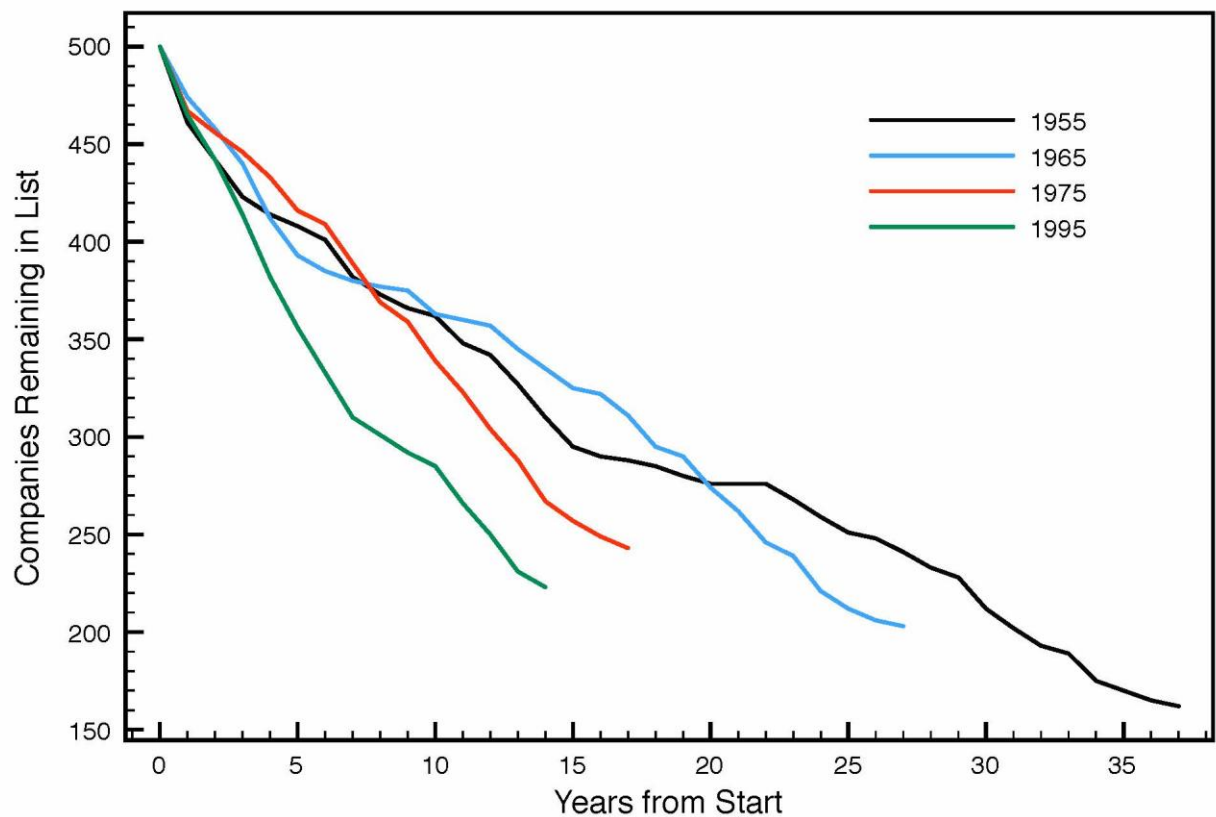


Figure 2. Authors' calculations from Fortune 500.

If we choose a starting year and an initial slate of companies in the Fortune 500 for that year, we can see at each successive year the number of original companies that still remain. Due to the constant change in the economy, this will necessarily decline. By choosing different starting years and plotting the curves of the decline from year to year, we can see how the pace of this turnover has quickened. For example, the list of Fortune 500 companies in 1955 (black curve) declines far more slowly than the list beginning in 1975 (red curve).



To see these numbers another way, Figure 3 plots standard deviations from the mean of 31.44.

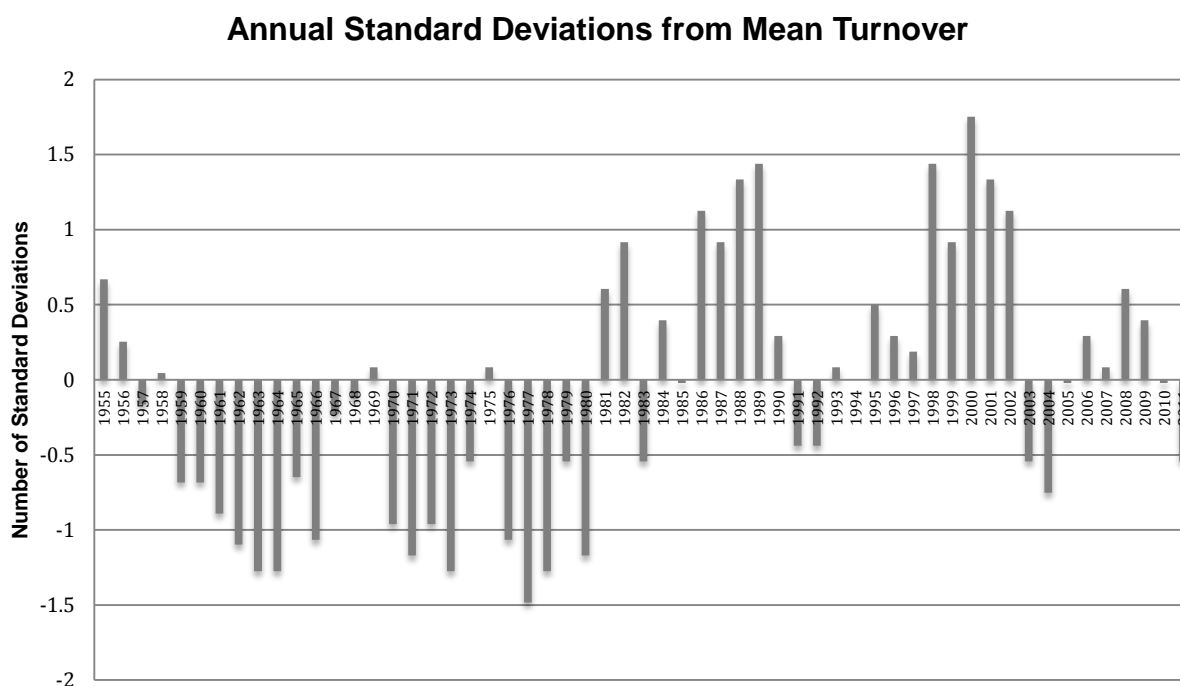


Figure 3. Authors' calculations from Fortune 500. The standard deviation is 8.05.

This chart mirrors some of what we see in Figure 1, but brings a bit more order to the numbers. We can see, for example, that a rising level of annual turnover does not hold for every single year. The largest deviations, perhaps not surprisingly, appear to cluster together.

It is tempting, when looking at the foregoing charts, to construct a narrative about the list and what it means. Glossing over annual variations, many commentators have compared turnover in terms of decades or periods. Popular literature and scholarship in economic history recall the 1950s and 1960s as an era of giant firms, the zenith of industrial capitalism, when John Kenneth Galbraith declared the entrepreneur to be finished in terms of playing any salient role in the economy. The 1980s and 1990s are set against these prior decades as an era of economic turmoil. To a certain extent, this is accurate and captured in the charts.<sup>19</sup> As we will see, however, idiosyncratic events, clustered in time and economic sector, may be what is really driving turnover.

To put this into any meaningful perspective, we first need to understand what it might mean. Is annual average turnover of thirty-one companies on the list of the 500 largest public companies, with occasional swings into the twenties and forties, a high rate of turnover? Low? To try to answer these questions, we looked at the work that several

<sup>19</sup> But this also can be very misleading. We could just as easily compare, say, the three-year periods of 1956-8 and 1995-7 and claim that, because average annual turnover was the same (35), things haven't changed much in forty years.

scholars have completed on churn among large companies to devise some comparable numbers. This is a horribly inexact process, because of the vast differences between older and more recent datasets, the changing nature of equity markets, the difference in what constitutes the largest firms over time, what industries are and aren't included, and other issues. Nevertheless, we thought it important to at least try so that we did not examine *Fortune* numbers in a historical vacuum.

What these scholars have found, predictably, is that turnover among large companies is not a unique hallmark of our era. The “supposedly exceptional turbulence in corporate rankings,” according to business historian Leslie Hannah, “is in fact also observed in the earlier periods of increasing national autarky and relative economic stagnation.”<sup>20</sup> The reason is simple: “Corporate dinosaurs are ubiquitous in an ever-changing world.”<sup>21</sup> Because no company, no matter how successful, lasts forever, and because only a fraction of companies survive more than a few decades, turnover of varying degrees is entirely natural. The ebb and flow in the level of turnover may simply be that, ebb and flow, with no transcendent economic meaning.

Hannah has looked at long-term trends in corporate change, finding that of the 100 largest companies in the world in 1912, twenty remained among the 100 largest in 1995. Of the original 100, fifty-four were headquartered in the United States, and of these companies, nine remained in the global top 100 in 1995. More than half of the American companies—twenty-nine—were no longer in existence, mostly due to acquisitions.<sup>22</sup> Slightly more specifically, Robert Bruner reports that of the 501 firms listed on the New York Stock Exchange in 1925, only sixty-five (13 percent) “existed in their independent corporate form in 2004.”<sup>23</sup> (Thus, this also would include mergers and acquisitions.)

Neil Fligstein has done some of the most heroic reconstructions, calculating decennial turnover—changes between the beginning and end of ten-year windows—among the 100 largest American companies over a sixty-year period:

**Number of Firms Staying on, Coming to, or Leaving List of 100 Largest American Companies, 1919-1979, from Fligstein**

Decade	1919-29	1929-39	1939-48	1948-59	1959-69	1969-79
<b>Stayers</b>	69	82	86	79	75	80
<b>Comers</b>	31	18	14	21	25	20
<b>Leavers</b>	31	18	14	21	25	20

**Table 1.** Recreated from, Neil Fligstein, *The Transformation of Corporate Control* (Harvard, 1990), Appendix Table C.2, p. 335.

<sup>20</sup> Hannah’s observation also is important for understanding that higher levels of turnover should not be automatically equated with “good” economic developments. Leslie Hannah, “Marshall’s ‘Trees’ and the Global ‘Forest’: Were ‘Giant Redwoods’ Different?” in Naomi R. Lamoreaux, *et al* (eds.), *Learning by Doing in Markets, Firms, and Countries* 261 (Chicago, 1999).

<sup>21</sup> Leslie Hannah, “Marshall’s ‘Trees’ and the Global ‘Forest’: Were ‘Giant Redwoods’ Different?” in Naomi R. Lamoreaux, *et al* (eds.), *Learning by Doing in Markets, Firms, and Countries* 254-5 (Chicago, 1999).

<sup>22</sup> Leslie Hannah, “Marshall’s ‘Trees’ and the Global ‘Forest’: Were ‘Giant Redwoods’ Different?” in Naomi R. Lamoreaux, *et al* (eds.), *Learning by Doing in Markets, Firms, and Countries* 254-5 (Chicago, 1999).

<sup>23</sup> Robert F. Bruner, *Deals from Hell: M&A Lessons that Rise Above the Ashes* 1-2 (Wiley, 2005).

Our calculations for decennial turnover among the top 100 *Fortune* companies show an uptick to thirty-five newcomers in the 1980s and thirty-eight in the 2000s. (We excluded the 1990s because the mid-decade inclusion of service companies would inflate the number.)

Such straightforward comparisons are misleading, of course. Prior periods of quiescence among large companies were, naturally, preceded by times of turnover. The “Great Merger Movement” from 1895 to 1904, in response to technological innovation and competition, led to a period of corporate stability, one that was in turn soon disrupted.<sup>24</sup> Bruner observes that 1,800 firms disappeared during that period, resulting in the formation of ninety-three trusts.<sup>25</sup> Consider, too, the turnover of the late 1920s, when new industries, on the back of electrification, came to be dominated by monopolies and oligopolies: 1,259 firms “disappeared” in mergers and acquisitions in 1928, with an additional 1,100 in 1929.<sup>26</sup> This includes both public and private companies, but represented a historically high level of activity—the number of M&A deals would not reach that level again for thirty years.<sup>27</sup>

Underscoring the high churn, bear in mind that there were fewer companies overall at that time. The relative nature of turnover when there are more than 1,000 mergers and acquisitions—at a time when there were roughly 2 million corporations in the United States—might be comparable to twice that number in the 1980s, when the overall number of businesses also had doubled.<sup>28</sup> A more accurate comparison, of course, also would have to account for the value of the M&A deals as a share of gross domestic product. Some research finds that, while takeover activity above 2 percent or 3 percent of GDP is “unusual,” during the height of the Great Merger Movement, it may have reached 10 percent—a level not achieved again until the 1990s.<sup>29</sup>

Summing up, business turnover is not necessarily a recent phenomenon and has previously reached (relatively) high levels. Each period of stability or turnover is the product of a prior period and carries the seeds of future trends. This dovetails with the argument of scholars such as Carlota Perez on the long-run cycles of economic change driven by technology and finance.<sup>30</sup> In some sense, turnover reflects the rhythms of capitalism. After all, from 1955 to 1959 (albeit only half a decade), average annual turnover was 6.5 percent of companies; in the 1960s and 1970s this fell to an average

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<sup>24</sup> Donald J. Smythe, “A Schumpeterian View of the Great Merger Movement in American Manufacturing,” SSRN, April 2009.

<sup>25</sup> Robert F. Bruner, *Deals from Hell: M&A Lessons that Rise Above the Ashes* (Wiley, 2005), p. 25.

<sup>26</sup> Robert Sobel, *The Age of Giant Corporations: A Microeconomic History of American Business, 1914-1992* (3<sup>rd</sup> ed., 1993), p. 75, 85. According to Sobel, the number of “disappeared” firms plummeted to only 107 in 1933. *Id.*

<sup>27</sup> Robert F. Bruner, *Deals from Hell: M&A Lessons that Rise Above the Ashes* (Wiley, 2005), p. 2.

<sup>28</sup> For a collection of long-run data, see George Thomas Kurian (ed.), *Datapedia of the United States 1790-2005: America Year by Year* (Bernard, 2<sup>nd</sup> ed., 2002), p. 437.

<sup>29</sup> Bengt Holmstrom and Steven N. Kaplan, “Corporate Governance and Merger Activity in the United States: Making Sense of the 1980s and 1990s,” *Journal of Economic Perspectives*, Vol. 15, No. 2, Spring 2001, p. 121.

<sup>30</sup> Carlota Perez, *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages* (Elgar, 2003).

of less than 5 percent per year. It rose to 7.5 percent annually in the 1980s and 1990s, but fell back to the 1950s average in the 2000s, at 6.5 percent.

### III. Methodological Reasons Why Fortune 500 Turnover Might Not Be a Useful Indicator

The overuse of the survivor technique, distorting our understanding of the process that has led to the present state of things, has affected several disciplines besides business history. If we merely observe that many of the firms that now dominate the economy are of ancient lineage, or that some of today's top firms were also at the top a century earlier, we might conclude that giant firms are *generally* long-lasting; yet the stated observation is equally compatible with the hypothesis that some initially small firms grow rapidly to become large, while corporate giants have, over reasonably long periods, a poor survival rate. Our current knowledge of survivors dominates our impression of the typical experience, and their triumphs are lionized, while the history of the failures is forgotten or considered untypical.<sup>31</sup>

We have seen that recent trends in Fortune 500 turnover have not necessarily been anomalous by historical standards. This doesn't vitiate the actual meaning of rising turnover, but it should dampen the breathlessness of some observers. We now turn to methodological concerns. In particular, the utility of comparing *Fortune* list turnover across time could be limited because of the long exclusion of non-industrial service firms. Beginning in 1956, the magazine published a separate Service 500 "directory of the largest U.S. non-industrial corporations."<sup>32</sup> This included industries such as commercial banking, diversified financial services, health care, life insurance, retail, transportation, and utilities. The service sector has, of course, been a major part of the American economy since well before *Fortune* began its list in 1955. But, as noted, *Fortune* only began an integrated services and industrials list in 1994. Some of the rising volatility in the 1990s likely reflects this higher level of sectoral diversity as well as more inherent volatility among service sectors. From 1955 to 1993, during the "industrials-only" era, median turnover on the *Fortune* list was twenty-nine companies per year; from 1995 to 2011, after services were included, the median rose to thirty-nine per year. Research has shown that shifting sectoral composition has accounted for some of the rise in volatility among publicly traded companies over the past thirty years. Specifically, as measured by employment growth volatility, there has been a fall in the employment share of manufacturing and a rise in the employment shares of Services, FIRE, and Retail: "volatility among publicly-traded firms in FIRE and Services is considerably greater."<sup>33</sup>

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<sup>31</sup> Leslie Hannah, "Marshall's 'Trees' and the Global 'Forest': Were 'Giant Redwoods' Different?" in Naomi R. Lamoreaux, *et al* (eds.), *Learning by Doing in Markets, Firms, and Countries* 254-5 (Chicago, 1999).

<sup>32</sup> See [http://money.cnn.com/magazines/fortune/fortune\\_archive/1985/06/10/65923/index.htm](http://money.cnn.com/magazines/fortune/fortune_archive/1985/06/10/65923/index.htm). See also Martha Groves, "Service Now Counts with Fortune 500," *Los Angeles Times*, April 26, 1995, at [http://articles.latimes.com/1995-04-26/business/fi-59111\\_1\\_fortune-services-companies](http://articles.latimes.com/1995-04-26/business/fi-59111_1_fortune-services-companies).

<sup>33</sup> Steven J. Davis, *et al*, "Volatility and Dispersion in Business Growth Rates: Publicly Traded versus Privately Held Firms," in Daron Acemoglu, *et al* (eds.), *NBER Macroeconomics Annual 2006* (2007) p. 107. FIRE = Finance, Insurance, and Real Estate.

This can be seen in Table 2, which charts the sectoral share of turnover in the four years following the methodological change in the composition of the list. Thus, in 1996, 45.7 percent of the companies dropping off the list were industrials, which also accounted for 40 percent of new entrants. Service companies—reflecting everything from banks, airlines, and retail, to utilities, health care, and insurance—account for a larger share of exits and entries than industrial sectors. The one exception here is 1998, when services and industrials were even. Over time, as services come to account for a larger and larger share of the entire list, they naturally account for more turnover as well.

**Sectoral Share of Companies Entering and Exiting List**

Share of	Companies Exiting List: Industrials	Companies Exiting List: Services	Companies Entering List: Industrials	Companies Entering List: Services
1995	40.5	59.5	--	--
1996	45.7	54.3	40	60
1997	20.6	79.4	32.4	47.1
1998	50	50	24.2	72.7
1999	29.3	65.9	22.7	77.3

**Table 2.** Industrial and Service Share of Turnover. Authors' calculations from Fortune 500. Totals may not add to 100 because of a handful of indeterminate cases.

Arguably, then, the stock that many commentators put in Fortune 500 turnover is well overdone because, while they point to it as indicative of underlying economic ferment, it long reflected only certain dimensions of the American economy. It only reflected, moreover, industries in which it takes a great deal of time to build large companies and, thus, displace incumbents. This also is apparent from a comparative historical perspective because the United States already led Europe in manufacturing productivity by the end of the nineteenth century—it was the catch-up in service sector productivity that may have truly consummated the American century, just at the moment when *Fortune* initiated its non-services industrial list.<sup>34</sup> Other researchers have shown that even during the supposedly staid 1950s and 1960s, there was plenty of innovation and churn in the U.S. services sector, especially in the growth—and globalization—of consultancies, advertising agencies, hotels, and fast food chains.<sup>35</sup> (Of course, even if service sector companies do not necessarily experience higher turnover, simply casting a wider sectoral net should expectedly lead to higher apparent turnover because of broader economic representation—it increases the probability.)

<sup>34</sup> "Comparisons of nineteenth-century service industries like shipping and banking with their modern equivalents (airlines and financial services generally) suggest that (unlike in manufacturing) America was internationally uncompetitive in many service sectors in the later nineteenth century, but became the world productivity leader after World War II. ... Thus, what happened in the twentieth-century American miracle was essentially that America got its act together in the non-manufacturing sector to consolidate a lead it already held (perhaps for essentially non-replicable reasons) in manufacturing (and agricultural) productivity." Leslie Hannah, "The American Miracle, 1875-1950, and After: A View in the European Mirror," *Business and Economic History*, vol. 25, no. 2, Winter 1995, p. 197, 202-203.

<sup>35</sup> See Geoffrey Jones, "Multinationals from the 1930s to the 1980s," in Alfred D. Chandler, Jr. and Bruce Mazlish (eds.), *Leviathans: Multinational Corporations and the New Global History* (Cambridge, 2005).

We also have concerns about the manner in which turnover is counted. Many companies enter and exit the list multiple times, with each one counting as an instance of “turnover.” This says more about relative revenue performance among companies than larger economic trends. The table below shows how many times companies have entered and exited the list over the last fifty years. So, 1,332 companies have come and gone once, while 248 companies have come and gone twice, and so on. Remarkably, one company has entered and exited the list on fourteen occasions!<sup>36</sup>

### Companies Coming and Going on the Fortune 500

Times Entered and Exited List	Number of Companies
0	416
1	1332
2	248
3	49
4	8
5	8
6	1
7	1
8	2
9	0
10	0
11	0
12	1
13	0
14	1

Table 3. Authors' calculations from Fortune 500.

Likewise, we recognize that many of the “new” companies on the Fortune 500 moved up from rankings below number 500. For example, ten companies that can be counted as “new” top 500 companies on the 2011 list were ranked somewhere between 501 and 525 the previous year. One natural consequence of this is that turnover on the Fortune 500 tends to be concentrated in the bottom of the list.<sup>37</sup> Our supposition is that, were turnover on the Fortune 1000 to be tracked, it would likely be lower than for the top half; but, since those data are only available since 2006, the comparison would not be nearly as robust. Nevertheless, movement in rank position is far greater for the lower-ranked Fortune 500 companies than those near the top.

Moreover, we need to keep in mind the ways in which the *Fortune* list gets formed. Commentators

mostly take it to represent the rise and fall of companies and industries, and to some extent it does reflect that turnover. But it also reflects company-specific management decisions. Take, for example, the financial services company, MasterCard—it traces its founding to 1966 and has been a force in finance for decades, yet it only became a public company in 2006, duly turning up on the Fortune 500. Its rival, Visa, presents a similar example, going public in 2008 and immediately joining the ranks of the largest public companies. The appearance of these two companies on the Fortune 500 thus looks, by a simple count, as turnover, but cannot necessarily be used to infer anything about turnover *at that point in time*. It may

<sup>36</sup> We have other concerns as well that deserve fuller investigation: in some instances, a company's appearance on the *Fortune* list does not match a cross-check with company history.

<sup>37</sup> The longer a company has been around and larger it is, the harder it is to dislodge it from the ranking. Among cities this is known as Gibrat's Law, where the growth of a city is proportional to its current size, and for career longevity, this is known as the Matthew Effect, where the more esteemed an individual is, the easier it is for her to accrue future success. While companies are distinct from these systems (and in some ways mirror biological species), there is far more churn in the lower-ranked Fortune 500 companies than those near to the top. This implies a regularity to how the ranking of a company is correlated with its mobility. See Michael Batty, “Rank Clocks,” *Nature* 444 (30) 592-596. 2006.

reflect management strategy, perceived conditions for an initial public offering (IPO), or something else, and the composition of the *Fortune* list is full of such variety. It doesn't mean we can take annual turnover on the list at face value.

#### IV. The Economic Meaning of Fortune 500 Turnover

We risk, however, swinging too far in the opposite direction. The observations collected at the beginning of this paper may place too much emphasis on Fortune 500 turnover, but it would be folly to argue that the list doesn't tell us anything. The ups and downs and trends in Figure 1 reflect, after all, underlying changes in technology, capital markets, and the divergent fortunes of different sectors of the economy. We may ask too much of the list by imposing a convenient narrative upon it, but the list does convey something meaningful.

Over time, as noted, mergers and acquisitions have generated considerable turnover among any chosen set of large companies, whether public or private. While M&A activity is not precisely coincident with *Fortune* turnover, we know that mergers and acquisitions do account for movement on and off the list, as well as up the list, with the increased size that results. Mergers and acquisitions also tend to occur in waves—economic historians count five merger waves in the past century:

- The Great Merger Movement of 1895-1904;
- The 1920s (some figures were offered above);
- The late 1960s;
- The 1980s;
- The late 1990s.

Additionally, the period 2002 to 2007 saw another historic rise in M&A activity.<sup>38</sup> When we look at these waves in the aggregate, as with Fortune 500 turnover, we seemingly discern macro-patterns and connections across time. To be sure, each period shares certain attributes. But they differ in their particulars, and this variation—by year, by sector, by motivating force—is something we must bear in mind when seeking to generalize about *Fortune* turnover. The 1960s peak in M&A activity is known as the conglomerate wave, which resulted in sprawling enterprises that brought sundry disconnected businesses under one corporate umbrella.<sup>39</sup>

Some of these conglomerates were taken apart in the 1980s wave, which contributed to the leap in Fortune 500 turnover during that decade. A gap opened between share

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<sup>38</sup> "These waves roughly synchronize with equity market conditions and thus carry with them the cachet of excess, hype, and passion that swirl in the booms. ... Every M&A boom has a bust." Robert F. Bruner, *Deals from Hell: M&A Lessons that Rise Above the Ashes* 1 (Wiley, 2005). See also Michael J. De La Merced and Jeffrey Cane, "Confident Deal Makers Pulled Out Checkbooks in 2010," *New York Times Dealbook*, January 3, 2011, at <http://dealbook.nytimes.com/2011/01/03/confident-deal-makers-pulled-out-checkbooks-in-2010/>.

<sup>39</sup> See, e.g., John G. Matsusaka, "Takeover Motives During the Conglomerate Merger Wave," *The RAND Journal of Economics*, Vol. 24, No. 3, Autumn 1993, p. 357.



prices and corporate book values, making it more lucrative to take the companies apart. Meanwhile, changing antitrust policy, deregulation across a variety of industries, and technological advance helped drive “a record number of divestitures, hostile takeovers, and transactions such as leveraged buyouts (LBOs).”<sup>40</sup> Indeed, Sobel claims that during the 1980s, “more than a third of the Fortune 500 corporations were acquired, merged, restructured, or taken private.”<sup>41</sup> Overall, it was estimated that more than 1,500 public companies were taken private in the 1980s—nearly the number of companies listed on the entire New York Stock Exchange in 1988.<sup>42</sup> This was the age of junk bonds, when academics anticipated the “eclipse of the public corporation.”<sup>43</sup>

Even these levels, however, were surpassed in the 1990s and 2000s: there were four times as many M&A deals in the 1990s as during the 1980s, spurred in part by rising M&A activity in Europe and Asia.<sup>44</sup> In the 1990s, this wave was fueled to a great extent by information technology—at the height of the bubble, in 2000, there was far and away more merger activity in computer software, supplies, and services than in any other sector, with only manufacturing anywhere close.<sup>45</sup> The M&A wave of the 2000s had more in common with the 1980s, with private equity transactions as a percentage of total U.S. stock market value reaching peaks in 1988 and 2006, when public-to-private transactions also increased.<sup>46</sup> (See Appendix.) Private-equity-led public-to-private transactions not only hit high levels from 2005 to 2008, but also far outpaced, in 2007 and 2008, the number of private-equity-backed initial public offerings.<sup>47</sup>

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<sup>40</sup> Greg N. Gregoriou and Luc Renneboog, “Understanding Mergers and Acquisitions: Activity Since 1990,” in Greg N. Gregoriou and Luc Renneboog (eds.), *International Mergers and Acquisitions Activity Since 1990: Recent Research and Quantitative Analysis* (2007), p. 3.

<sup>41</sup> Robert Sobel, *The Age of Giant Corporations: A Microeconomic History of American Business, 1914-1992* (3<sup>rd</sup> ed., 1993), p. 269.

<sup>42</sup> See Maggie Mahar, *Bull! A History of the Boom and Bust, 1982-2004* (2004), pp. 51-53.

<sup>43</sup> Michael C. Jensen, “Eclipse of the Public Corporation,” *Harvard Business Review*, September 1989.

<sup>44</sup> Greg N. Gregoriou and Luc Renneboog, “Understanding Mergers and Acquisitions: Activity Since 1990,” in Greg N. Gregoriou and Luc Renneboog (eds.), *International Mergers and Acquisitions Activity Since 1990: Recent Research and Quantitative Analysis* (2007), p. 3.

<sup>45</sup> Paul A. Pautler, “Evidence on Mergers and Acquisitions,” Bureau of Economics, Federal Trade Commission, September 25, 2001, at <http://www.ftc.gov/be/workpapers/wp243.pdf>.

<sup>46</sup> See Steven N. Kaplan and Per Strömberg, “Leveraged Buyouts and Private Equity,” *Journal of Economic Perspectives*, Winter 2009, at 121. Public-to-private transactions occur when private equity firms take publicly traded companies private.

<sup>47</sup> See David Weild and Edward Kim, *Market Structure is Causing the IPO Crisis—and More*, Grant Thornton, Capital Markets Series, June 2010.



## Mergers and Acquisitions as a Percentage of Companies Exiting Fortune 500

Year	M&A Transactions as Share of Company Exits
1995	21.6
1996	31.4
1997	47.1
1998	52.2
1999	43.9
2000	61.2

**Table 4.** Totals do not always add to 100 percent because there remain some exits for which reasons are indeterminate.

Table 4 shows a small sample of years for which we estimated M&A volume as a percentage of overall turnover. The share not only varies widely (even in this small sample) but also tracks overall trends in M&A activity.<sup>48</sup>

The reason that M&A activity matters so much for interpreting Fortune 500 turnover is that it not only moves in waves but also tends to be concentrated. During the Great Merger Movement, the 1920s, the 1980s, and the 1990s, mergers and acquisitions clustered within certain parts of the economy. For example, the top merger industries in the 1980s were completely different from those in the 1990s.<sup>49</sup> This means that M&A waves and the sectoral concentration within them result more from industry shocks—new technologies, deregulation, financial innovations—than broad macroeconomic changes.<sup>50</sup> The same likely applies to *Fortune* turnover: what is interpreted as an indication of broad structural change is really a reflection of sector-specific developments.<sup>51</sup> The two are related, of course. Structural economic changes result precisely from these micro changes, but we cannot seize on one number as their embodiment.<sup>52</sup>

<sup>48</sup> See also Alix Stuart, “Is Going Public Out of Style?” *CFO Magazine*, May 2011, at [http://www.cfo.com/article.cfm/14570187/1/c\\_14570395](http://www.cfo.com/article.cfm/14570187/1/c_14570395).

<sup>49</sup> The top industries in the 1980s were: Oil & Gas; Textiles; Miscellaneous Manufacturing; Non-Depository Credit; and Food. During the 1990s they were: Metal Mining; Media and Telecommunications; Banking; Real Estate; and Hotels. See Gregor Andrade, Mark Mitchell, and Erik Stafford, “New Evidence and Perspectives on Mergers,” *Journal of Economic Perspectives*, Vol. 15, No. 2, Spring 2001, p. 103.

<sup>50</sup> See Mark L. Mitchell and J. Harold Mulherin, “The Impact of Industry Shocks on Takeover and Restructuring Activity,” *Journal of Financial Economics*, Vol. 41, 1996, p. 193.

<sup>51</sup> We also cannot ignore global competition—the *Fortune* list is not restricted to economic developments in the United States. In particular, global competition rose in the 1980s and has only increased further: In 2010, nearly half of the revenues of S&P 500 companies derived from outside the United States. Howard Silverblatt and Dave Guarino, “S&P 500: 2010 Global Sales,” Standard & Poor’s Research Report, July 19, 2011, at [http://www.standardandpoors.com/servlet/BlobServer?blobheadername3=MDT-Type&blobcol=urldata&blobtable=MungoBlobs&blobheadervalue2=inline%3B+filename%3DSP500\\_GLOBAL\\_SALES\\_2010\\_FINAL.pdf&blobheadername2=Content-Disposition&blobheadervalue1=application%2Fpdf&blobkey=id&blobheadername1=content-type&blobwhere=1243933233095&blobheadervalue3=UTF-8](http://www.standardandpoors.com/servlet/BlobServer?blobheadername3=MDT-Type&blobcol=urldata&blobtable=MungoBlobs&blobheadervalue2=inline%3B+filename%3DSP500_GLOBAL_SALES_2010_FINAL.pdf&blobheadername2=Content-Disposition&blobheadervalue1=application%2Fpdf&blobkey=id&blobheadername1=content-type&blobwhere=1243933233095&blobheadervalue3=UTF-8).

<sup>52</sup> Some interpret all of this activity, micro and macro, as reflections of very real changes over time in the nature of the business firm: the period from the 1950s to the 1970s was that of the “classic” large, integrated firm of Chandlerian scale and scope. In the 1980s and 1990s, by contrast, boundaries shifted

In addition to mergers and acquisitions, changes in Fortune 500 turnover, particularly higher annual volatility, could be related to the burst of new public offerings in the 1980s.<sup>53</sup> The rising number of IPOs, in fact, could be a plausible driver of higher turnover among public companies—if there are more competitors, more targets for acquisitions, and the rise of newer industries represented by IPOs, then we would certainly see this reflected in *Fortune* turnover, particularly with a lag, after those newly public companies grew bigger.<sup>54</sup>

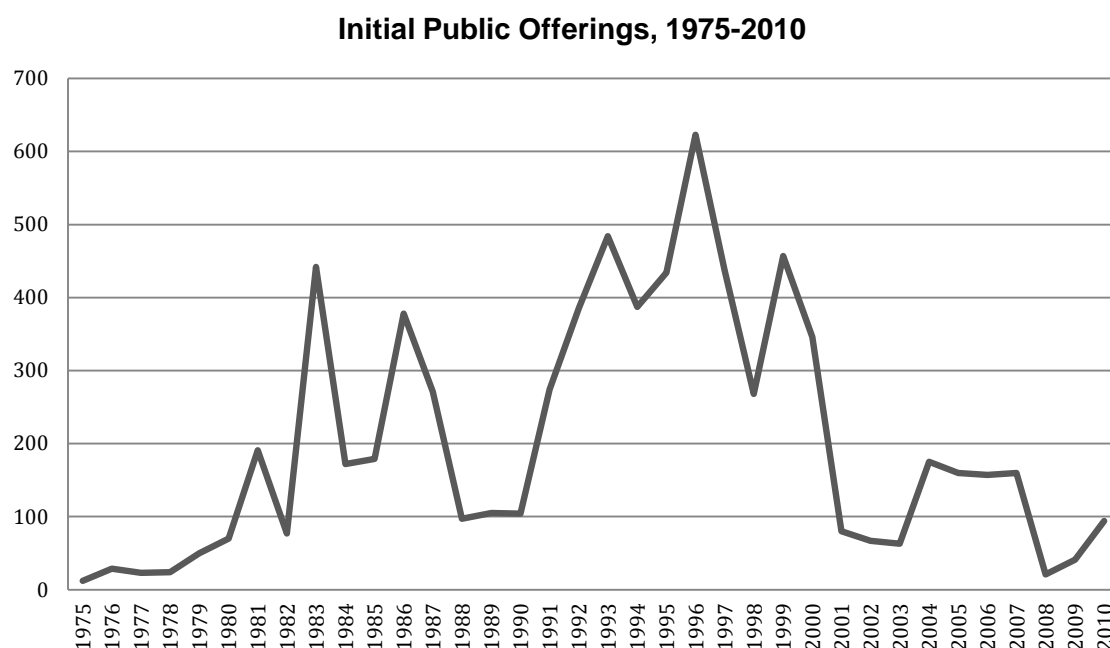


Figure 4. Source: <http://bear.warrington.ufl.edu/ritter/ipodata.htm>.

The causal link between these is probably quite attenuated. The relationship between IPOs and Fortune 500 turnover also will be complicated by the types of companies that go public as well as their age at the time of public offering. As shown in Table 5, the

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with the deconstruction of horizontal and vertical integration and the rise of elongated supply chains and systems or “webs” of production. See Geoffrey Jones, “Multinationals from the 1930s to the 1980s,” in Alfred D. Chandler, Jr. and Bruce Mazlish (eds.), *Leviathans: Multinational Corporations and the New Global History* (Cambridge, 2005); Merritt B. Fox, “Promoting Innovation: The Law of Publicly Traded Corporations,” *Capitalism and Society*, Vol. 5, Issue 3, 2010, p. 1.

<sup>53</sup> For recent historical data on initial public offerings, see Jay Ritter’s IPO Data compilation, at <http://bear.warrington.ufl.edu/ritter/ipodata.htm>; for a pithy overview of these market fads, see Burton G. Malkiel, *A Random Walk Down Wall Street* (Norton, 10<sup>th</sup> ed., 2011).

<sup>54</sup> The three variables of Fortune 500 turnover, M&A activity, and IPOs are related, of course. In 1982, for example, women’s apparel maker Leslie Fay was taken private in a leveraged buyout. Four years later, it went public again and showed up on the Fortune 500 list in 1987. By 1993, the company declared bankruptcy. In terms of the list, the company slid from the 377<sup>th</sup> spot in 1991 to 471<sup>st</sup> in 1994 (with steep losses) and then off the list. See <http://www.fundinguniverse.com/company-histories/The-Leslie-Fay-Company-Inc-Company-History.html>, and [http://money.cnn.com/magazines/fortune/fortune500\\_archive/snapshots/1994/3253.html](http://money.cnn.com/magazines/fortune/fortune500_archive/snapshots/1994/3253.html).

median age of companies going public has “with only temporary aberrations ... stayed remarkably constant at about 7 years.”<sup>55</sup>

Percentiles of Firm Age at Time of IPO	25th	50th	75th
1980-89	3	7	16
1990-98	4	8	16
1999-2000	3	5	9
2001-2003	6	12	26
<b>All Years</b>	<b>4</b>	<b>7</b>	<b>15</b>

**Table 5.** Source: Tim Loughran and Jay Ritter, “Why Has IPO Underpricing Changed Over Time?” *Financial Management*, Autumn 2004, p. 5.

Other research has found that younger companies (defined as younger than ten or twenty years old) have been accounting for a greater share of total equity market capitalization.<sup>56</sup> While there is likely some link between IPO trends and turnover trends (particularly if we were to look down the Fortune 1000), it is not as simple as comparing volume. Further, rapid growth of newly listed technology companies in the 1990s followed by greater entry by older companies (and, thus, presumably larger, such as MasterCard), may have accounted for part of the rise in *Fortune* turnover in the 2000s. (See Appendix.)

Indeed, the phenomena of a changing IPO market and rising Fortune 500 turnover are related. As documented by several sources, over the past fourteen years there has been a falling share of small company IPOs and, in turn, a growing share of large company IPOs. During the 1990s, \$50 million IPO transactions accounted for three-quarters of all IPOs; since 1998, that has plunged and has been around one-third since 2000.<sup>57</sup> Meanwhile, there has been a growing rate of acquisitions rather than IPOs for small companies—for venture capital-backed companies, the split between the two exits has reversed. In the early to mid-1990s, one-third of VC-backed exits were M&A; beginning in 2001, that has consistently accounted for 80 percent of such exits.<sup>58</sup> For those small companies that do go public, there has been a sharply higher incidence in the rate at which such companies are acquired within their first three years after IPO.<sup>59</sup> Similarly, small companies that have recently gone public have been involved in a much higher level of their own acquisitions in the past decade. Gao, Ritter, and Zhu call this an “eat or be eaten world” where, because of structural changes to markets in terms of

<sup>55</sup> Tim Loughran and Jay Ritter, “Why Has IPO Underpricing Changed Over Time?” *Financial Management*, Autumn 2004, p. 5.

<sup>56</sup> See, e.g., Jason Fink, *et al*, “IPO Vintage and the Rise of Idiosyncratic Risk,” Working Paper, February 2005, at <http://www.ruf.rice.edu/~westonj/wp/ipoage.pdf>.

<sup>57</sup> See David Weild and Edward Kim, *Market Structure is Causing the IPO Crisis—and More*, Grant Thornton, Capital Markets Series, June 2010.

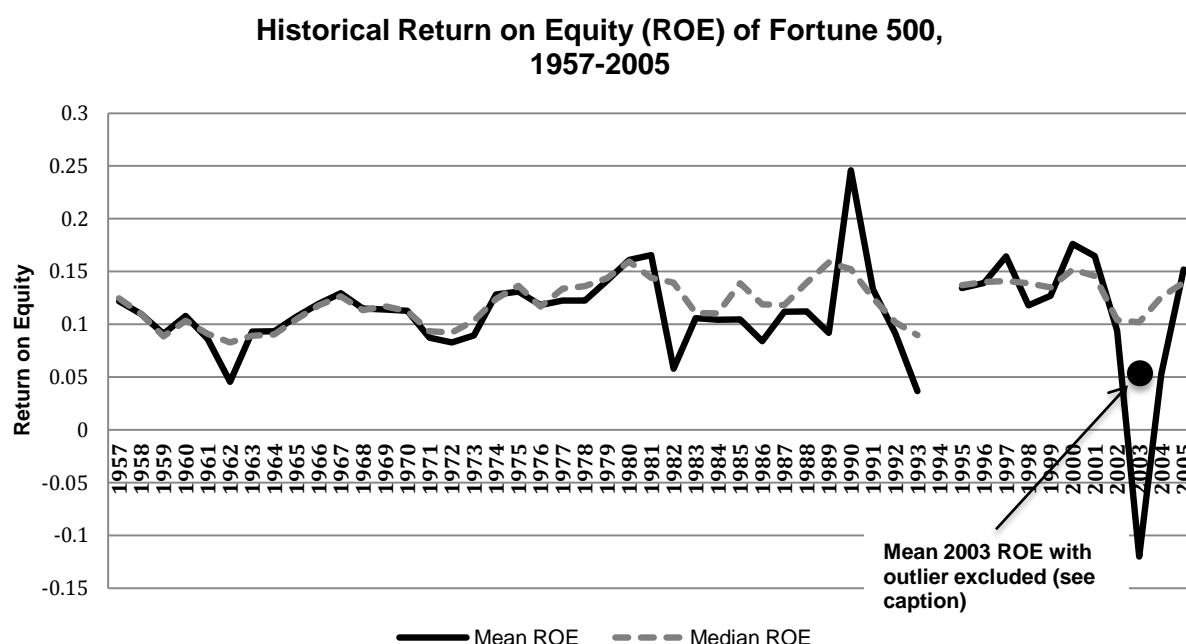
<sup>58</sup> IPO Task Force, “Rebuilding the IPO On-Ramp: Putting Emerging Companies and the Job Market Back on the Road to Growth,” U.S. Department of Treasury, October 2011, at <http://www.wsgr.com/PDFs/rebuilding-IPO.pdf>.

<sup>59</sup> See, Xiaohui Gao, Jay R. Ritter, and Zhongyan Zhn, “Where Have All the IPOs Gone?” Working Paper, November 2011, at [http://bear.warrington.ufl.edu/ritter/Where%20Have\\_Nov4\\_2011.pdf](http://bear.warrington.ufl.edu/ritter/Where%20Have_Nov4_2011.pdf).

payoffs and incentives, organic growth is less sought and less valued than acquisitive growth.<sup>60</sup> Thus, small, growing companies either pursue an exit through acquisition rather than IPO, get acquired soon after going public, or, after their IPO, aggressively seek to grow through mergers and acquisitions.

One result of this has been a sharp drop in the number of public companies in the United States because there has been more M&A activity without a consequent rise in IPOs.<sup>61</sup> Greater *Fortune* turnover is both cause (M&A activity) and result (a focus on acquisitive growth rather than organic growth), and leads to greater variance in company growth rates and thus movement up, down, on, or off the list.

Further, we might expect that greater volatility among the Fortune 500 is reflected in company performance. Higher turnover, for example—whatever the causes—could have resulted in stronger companies dominating the *Fortune* list. Conversely, higher turnover might be a consequence of higher variability in performance, with more unstable companies veering in and out of the list, driven in part by mergers and acquisitions. To investigate this, we looked at return on equity (ROE) over time.



**Figure 5.** Source: Fortune 500. 1994 is omitted. The negative value for 2003 ROE is dragged down by one far outlying data point: an ROE of -8,600 percent. When that is excluded, the average ROE for 2003 is 6.21. The standard deviation also falls back near the 1990s trend.

As can be seen, the mean and median ROE remain quite constant from 1957 to 2005, without movement in any particular direction. However, the variation in yearly ROE for the Fortune 500 companies has increased, beginning in the 1980s (see Appendix).

<sup>60</sup> See, Xiaohui Gao, Jay R. Ritter, and Zhongyan Zhn, "Where Have All the IPOs Gone?" Working Paper, November 2011, at [http://bear.warrington.ufl.edu/ritter/Where%20Have\\_Nov4\\_2011.pdf](http://bear.warrington.ufl.edu/ritter/Where%20Have_Nov4_2011.pdf).

<sup>61</sup> See David Weild and Edward Kim, *A Wake-Up Call for America*, Grant Thornton, Capital Markets Series, November 2009.

## V. The Relationship Between Fortune 500 Turnover and Macroeconomic Trends

The most important and intellectually interesting point about rising turnover on the Fortune 500 list is that it occurred during the period, from the early 1980s to the mid-2000s, that has come to be known as the Great Moderation. By many economic measures, volatility in the American economy fell dramatically after 1983. The composition of falling volatility and the reasons behind it have been the subject of numerous studies. Some economists subscribe to stories of improved monetary policy and financial innovation, while others seek to prove a “good luck” hypothesis. Others have shown that the downward trend in volatility—in real GDP growth, durable goods output, and other areas—after 1983 was perhaps the resumption of the long-term trend of the 1950s and 1960s rather than a new development.<sup>62</sup> Davis and Kahn persuasively show that improved inventory management techniques played a large role in driving volatility downward in the 1980s and 1990s.<sup>63</sup>

The juxtaposition with headline numbers on Fortune 500 turnover is stark: at the very moment that the volatility of aggregate economic output fell and stabilized, volatility among the largest American public companies rose, both in the aggregate and in annual variance. These two trends could be two sides of the same coin. First, reduced macro volatility, especially cheaper debt via low and stable interest rates, could have been a platform for greater turnover among large companies. This would have been given further fuel by things such as deregulation in a number of American industries in the 1970s and 1980s.<sup>64</sup> Second, rising turnover among the largest public companies could have been the mechanism for moderated macro volatility because it would drive productivity and lead to the disappearance of unproductive companies. Improved inventory management, a key development in Davis and Kahn’s story, would be an example of this. More efficient supply chains mean more micro but less macro volatility. Individual firms differ on a wide variety of dimensions—those firms that more quickly adopted new technologies allowing them to better anticipate sales and implement just-in-time inventory management would simultaneously drive out competitors (thus increasing turnover through both competition and M&A) and help smooth macro volatility. Theoretically, at least, higher efficiencies at the firm level should bring macroeconomic benefits along with higher volatility.

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<sup>62</sup> For a comprehensive study and overview of the literature, see Steven J. Davis and James A. Kahn, “Interpreting the Great Moderation: Changes in the Volatility of Economic Activity at the Macro and Micro Levels,” *Journal of Economic Perspectives*, vol. 22, Fall 2008, pages 155-180.

<sup>63</sup> See Steven J. Davis and James A. Kahn, “Interpreting the Great Moderation: Changes in the Volatility of Economic Activity at the Macro and Micro Levels,” *Journal of Economic Perspectives*, vol. 22, Fall 2008, pages 155-180.

<sup>64</sup> Only some sectors that experienced deregulation and other structural changes (foreign competition, trade embargoes, slowing demand) in the 1980s were represented on the *Fortune* list. This included textiles, petroleum, natural gas, steel, and food processing. But two of the most significant deregulatory events—airlines and trucking—were not reflected in the Fortune 500. See Mark L. Mitchell and J. Harold Mulherin, “The Impact of Industry Shocks on Takeover and Restructuring Activity,” *Journal of Financial Economics*, Vol. 41, 1996, p. 193.

More telling, and more useful for our purposes, have been the findings of economists that firm-level volatility has fallen nearly continuously in the United States for thirty years. Employment changes (positive or negative) across most firms in the economy became smoother, more moderate in the annual change. Yet there is a crucial distinction. There has been a steady downward trend in employment volatility among privately held companies but a marked increase, especially since the early 1990s, in the same measure among public companies. This “volatility convergence” in employment holds when the volatility of sales at public companies is measured over time.<sup>65</sup> Some economists have attributed this to “a pronounced shift in the economic selection process governing entry into the set of publicly traded firms, and this shift greatly affected volatility trends among publicly traded firms.”<sup>66</sup> In particular, the influx of new initial public offerings in the 1980s and 1990s drove rising volatility among public companies, especially since so many of those newly public companies grew so rapidly.<sup>67</sup> It is estimated that, by 2000, firms that went public in the 1980s and 1990s accounted for 40 percent of employment in publicly traded companies.<sup>68</sup> Take, for example, the computer company Dell—founded in 1984, it went public in 1988 and grew rapidly enough to make the Fortune 500 in 1992, subsequently vaulting up the list in the latter half of the decade. Davis *et al* show that the 1990s cohort of companies that later went public made huge employment gains by 2004, accounting for the largest employment share among publicly traded in an astonishingly short amount of time.<sup>69</sup>

Turnover among the Fortune 500, then, is one reflection of that rising volatility among public companies, even as macroeconomic volatility fell overall.<sup>70</sup> Yet rising turnover

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<sup>65</sup> We must keep in mind, of course, that despite the convergence, absolute volatility among privately held firms is still higher than publicly traded companies. See Steven J. Davis, *et al*, “Volatility and Dispersion in Business Growth Rates: Publicly Traded versus Privately Held Firms,” in Daron Acemoglu, *et al* (eds.), *NBER Macroeconomics Annual 2006* (2007) p. 107; Steven J. Davis and James A. Kahn, “Interpreting the Great Moderation: Changes in the Volatility of Economic Activity at the Macro and Micro Levels,” *Journal of Economic Perspectives*, vol. 22, Fall 2008, pages 155; Diego Comin and Sunil Mulani, “Diverging Trends in Aggregate and Firm Volatility,” *Review of Economics and Statistics* (May 2006), p. 374.

<sup>66</sup> Steven J. Davis and James A. Kahn, “Interpreting the Great Moderation: Changes in the Volatility of Economic Activity at the Macro and Micro Levels,” *Journal of Economic Perspectives*, vol. 22, Fall 2008, p. 155, 173.

<sup>67</sup> This partly translated into higher volatility for individual stock returns. See, e.g., John Y. Campbell, *et al*, “Have Individual Stocks Become More Volatile? An Empirical Exploration of Idiosyncratic Risk,” *Journal of Finance*, Vol. LVI, No. 1, February 2001, p. 1; Eugene F. Fama and Kenneth R. French, “New Lists: Fundamentals and Survival Rates,” *Journal of Financial Economics* (2004), p. 229.

<sup>68</sup> See Steven J. Davis, *et al*, “Volatility and Dispersion in Business Growth Rates: Publicly Traded versus Privately Held Firms,” in Daron Acemoglu, *et al* (eds.), *NBER Macroeconomics Annual 2006* (2007) p. 107; Steven J. Davis and James A. Kahn, “Interpreting the Great Moderation: Changes in the Volatility of Economic Activity at the Macro and Micro Levels,” *Journal of Economic Perspectives*, vol. 22, Fall 2008, p. 155. Davis and Kahn caution, however, that “considerable care is required when drawing inferences about the sources and nature of the Great Moderation from data on equity returns or from any data limited to publicly traded firms. *Id.* at 177.

<sup>69</sup> See Steven J. Davis, *et al*, “Volatility and Dispersion in Business Growth Rates: Publicly Traded versus Privately Held Firms,” in Daron Acemoglu, *et al* (eds.), *NBER Macroeconomics Annual 2006* (2007) p. 107.

<sup>70</sup> Because the primary measure of all-firm volatility in these studies is employment growth rate, and because employment in privately held companies far outweighs employment in public companies, overall

among the largest public companies has not necessarily reflected anything unitary in the direction of the American economy.<sup>71</sup> For one thing, the rising number of newly listed companies in the 1980s would not necessarily have had a direct impact on the *Fortune* list—no matter how compelling the narrative one wishes to tell—because of the composition of the list. At that point, service companies were still excluded and while not all of those newly public companies were service companies, some significant share of them certainly were. Rising Fortune 500 turnover in the 1980s was thus likely more a function of leveraged buyouts, deregulation, and new sources of competition. In the 1990s, turnover rose to greater levels in part because of that prior wave of newly public companies as well as other trends, including another wave of mergers and acquisitions and the inclusion of service sectors.

Behind all of this is the growth and diversification of financial services, which economists attribute for the higher listing rate of more volatile firms as well as, perhaps, greater risk-taking by individual firms. In this story, greater portfolio diversification—via mutual funds, easier securities trading, and greater market participation—allows readier access for younger (and riskier) companies looking to go public, induces listed firms to take greater risks because of the larger pool of available capital, and “weakens one motive for organizing production activity around large, internally diversified firms.”<sup>72</sup> The “financialization” of the American economy since the late 1970s, therefore, would have underwritten higher levels of volatility among publicly traded companies and greater Fortune 500 turnover in numerous ways: new types of investors (especially the growth of pension funds and mutual funds), cheaper cost of capital, more IPOs from younger firms, and so on.

Perhaps the most interesting analysis and visualization of the Fortune 500 (and 1000) and what it tells us about economic change and the U.S. economy would be one that is likely high impossible. This would show the threads of all companies that have fed into the list over the past 150 years, the origins, the combinations, the break-ups, and so on. Some of the giants on the list began as small, unassuming operations; others came into existence as giants from the start, whether as spinoffs, mergers, or well-capitalized new businesses. Thousands, perhaps millions, of companies are somewhere in the background of the largest companies now dominating the economy. It is in the total variety of these corporate histories—from the romantic to the humdrum—where we find

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firm-level volatility still fell over the quarter century from 1977 to 2001. Steven J. Davis and James A. Kahn, “Interpreting the Great Moderation: Changes in the Volatility of Economic Activity at the Macro and Micro Levels,” *Journal of Economic Perspectives*, vol. 22, Fall 2008, p. 155.

<sup>71</sup> Comin and Mulani do propose a somewhat unitary development, which is the negative relationship between embodied and disembodied innovations. In their scheme, a rise in embodied innovations (patentable innovations) by market-leading companies would lead to greater firm-level volatility without affecting aggregate economic volatility. Furthermore, there would be more market turnover due to rising investments in embodied innovations because such innovations would be rivalrous goods leading to winners (such as new entrants) and losers (such as incumbents). See Diego Comin and Sunil Mulani, “Diverging Trends in Aggregate and Firm Volatility,” *Review of Economics and Statistics* (May 2006), p. 374.

<sup>72</sup> Steven J. Davis, *et al*, “Volatility and Dispersion in Business Growth Rates: Publicly Traded versus Privately Held Firms,” in Daron Acemoglu, *et al* (eds.), *NBER Macroeconomics Annual 2006* (2007) p. 107.



the real story of American capitalism and how economic growth happens, not in any summary statistic about turnover according to relative changes in revenues and market capitalization.<sup>73</sup> Such a project would roll in parts of evolutionary economics, the metabolic theory of ecology, Zipf's law, the detailed reconstruction of corporate histories, business lifecycle analysis, and so forth.<sup>74</sup>

## VI. Concluding Thoughts

Something like the Fortune 500 list lends itself to irresistible generalizations about the economy. This is just the nature of history—the temporal brackets we place around events and the lines we draw between cause and effect each year usually dissolve in an incessant tide of new causes and effects. The list is unquestionably an important marker of American capitalism and several aspects of it can be used to chart historical change. Basic counts of the number of companies entering and exiting the list each year do illustrate rising turnover over time. For several reasons, this cannot be taken at face value.

First, from a methodological standpoint, the exclusion of service companies for forty years, the repeat entry and exit of many companies, and the concentration of churn toward the bottom of the list, all mitigate the economic meaningfulness of turnover. Second, even taking turnover as methodologically meaningful, from a historical perspective the rise in average turnover—and rising volatility—echoes prior periods that predate the *Fortune* list. It cannot be treated, as it is by some, as historically unique. Finally, to the extent that turnover reflects underlying economic changes—mergers and acquisitions, initial public offerings, changes in financial markets—these need to be understood on their own terms, with temporal and sectoral concentration and various causes, not filtered through a single figure of turnover that glosses over the variation. It is economic variation, along a host of dimensions, that is most meaningful for economic evolution, not aggregate data.

We must conclude by picking up the stick from the other end, as it were, and pointing out that the Fortune 500 and 1000 lists also represent something quite remarkable. In an economy in which thousands of businesses of all ages perish each year, and where only a fraction of companies can expect to survive more than a few decades, let alone grow to a large size, the persistence and growth and success of the companies on these lists is something worth admiring. True, the lionization of *In Search of Excellence* and *Built to Last* proved to be overdone, but, conversely, celebration of entrepreneurs (whether in terms of young, growing businesses or the canonization of small business

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<sup>73</sup> A good way to think about the Fortune 500 and all the threads that feed into it and change over time is in the context of Ricardo J. Caballero, *Specificity and the Macroeconomics of Restructuring* (MIT, 2007). For our purposes, Caballero notes that the “evidence points to a massive and persistent process of ongoing restructuring which takes place mostly within (rather than across) narrowly defined sectors.” *Id* at 3. See also Larry L. Deutsch (ed.), *Industry Studies* (M.E. Sharpe, 3<sup>rd</sup> ed., 2002).

<sup>74</sup> The usefulness of any further research also would be enhanced by the inclusion of turnover among the largest private corporations in the United States, which *Forbes* has ranked for the last twenty-five years: [http://www.forbes.com/lists/2011/21/private-companies-11\\_land.html](http://www.forbes.com/lists/2011/21/private-companies-11_land.html).



by politicians) can obscure the essential role of *Fortune* companies.<sup>75</sup> Such a statement must strike one as odd because the daily life of most Americans is full of interactions with both types of companies—how could anyone overlook the presence of Walmart or Exxon or Apple?

Nevertheless, as Michael Mandel has pointed out, it is a “now-heretical idea that scale is an advantage for innovation.”<sup>76</sup> Take a look at how the United States compares against other countries, and you will see that big is not necessarily bad and small is not always beautiful. Statistics from the World Bank and the Organisation for Economic Cooperation and Development (OECD) indicate that the U.S. economy derives a huge amount of benefit from giant firms.<sup>77</sup> Meanwhile, the Italian economy—not exactly known for dynamism of late—is dominated by small companies. While no simple generalizations can capture international comparisons, it is equally clear, to Mandel’s point, that we cannot generalize about the relative importance of large and small companies.<sup>78</sup>

If anything, the presence of larger and older companies has been growing in the United States, at least by some measures. This growing weight could be driven by Fortune 500 turnover. For example, there are four times as many companies with more than 500 employees today than in 1958, while the overall population of firms has only doubled over that time period. Twenty-seven percent of the workforce is in firms with more than 10,000 employees, compared to 11 percent in 1958.<sup>79</sup> In 1958, according to U.S. Census data, 55.1 percent of the American workforce was in “small” business, which the Census Bureau defines as firms with fewer than 500 employees. By 2009, this had fallen slightly to 49.4 percent.<sup>80</sup> Correspondingly, the share of employment in young firms (five years and younger) has been falling, from one in five employees in 1982 to

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<sup>75</sup> See Tom Peters and Robert Waterman, *In Search of Excellence: Lessons from America’s Best-Run Companies* (Warner, 1982); Jim Collins and Jerry I. Porras, *Built to Last: Successful Habits of Visionary Companies* (HarperCollins, 1994).

<sup>76</sup> Michael Mandel, “Scale and Innovation in Today’s Economy,” Progressive Policy Institute, December 2011, at <http://progressivepolicy.org/scale-and-innovation-in-todays-economy>.

<sup>77</sup> See OECD, “Measuring Entrepreneurship: A Digest of Indicators,” (2009), at [http://www.oecd.org/document/31/0,3746,en\\_2649\\_34233\\_41663647\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/31/0,3746,en_2649_34233_41663647_1_1_1_1,00.html); Meghana Ayyagari, et al, “Small vs. Young Firms Across the World,” World Bank Policy Research Working Paper 5631, April 2011, at [http://www-wds.worldbank.org/servlet/WDSCContentServer/WDSP/IB/2011/04/11/000158349\\_20110411130747/Rended/PDF/WPS5631.pdf](http://www-wds.worldbank.org/servlet/WDSCContentServer/WDSP/IB/2011/04/11/000158349_20110411130747/Rended/PDF/WPS5631.pdf).

<sup>78</sup> See also John Tozzi, et al, “BBW 50, *BloombergBusinessweek*’s Ranking of Top-Performing Companies,” *BloombergBusinessweek*, January 23, 2012.

<sup>79</sup> United States Department of Commerce, Bureau of the Census, “Enterprise Statistics: 1958, Part 1- General Report,” U.S. Government Printing Office (Washington, 1963); Census Bureau, Statistics of U.S. Business, at <http://www.census.gov/econ/susb/>.

<sup>80</sup> Census Bureau, Statistics of U.S. Business, at <http://www.census.gov/econ/susb/>. As with firm age, the definitional lines drawn in the data by the Census Bureau are somewhat misleading. A company that is five years old is defined as “young,” while a six-year-old firm is no longer young and is instead classified with firms of all other ages. Likewise, a firm with twenty employees is classified, along with one with 400 employees, as a “small” business.

one out of eight in 2009.<sup>81</sup> Indeed, Davis *et al* conclude that shifts in the age distribution of employment, from younger to older firms, account for one-quarter of the decline in volatility among privately held firms since the late 1970s.<sup>82</sup> On the harder to measure indicator of innovation, there appears to be some evidence that large companies have been accounting for a growing share of “disruptive” innovations. By one count, their share has risen from 25 percent to 35 percent over the past twenty years, twice the share of large companies from 1876 to 1980.<sup>83</sup>

It also is not entirely clear that we should want or celebrate higher turnover among the Fortune 500. Do we want our largest, and seemingly most stable, companies zooming up and down the rankings? We want them to continuously innovate and even reinvent themselves (as most of the top companies have done), but not bouncing up and down in value.<sup>84</sup> Here, mergers and acquisitions are particularly valuable in terms of economic restructuring. Yet not all turbulence is created equal—in his sample of 2,800 M&A transactions from 1985 to 2000, Robert Bruner found that the very best and, especially, the very worst, value-destroying deals of the entire period were concentrated in the “hot market” of 1998 to 2000. The high Fortune 500 turnover in these years was thus not necessarily a good thing in terms of shareholder value and economic benefits.<sup>85</sup>

Volatility among companies, moreover, also has implications for employees. Economists have found that even as macro volatility fell during the Great Moderation, this was not necessarily felt at the household level.<sup>86</sup> Income and consumption volatility actually rose, reflecting a rise in earnings uncertainty for individuals and deteriorating economic security despite apparent macroeconomic stability. This is another potential consequence of Fortune 500 turnover, especially as they come to play a larger and larger economic role.

None of this denies the important role of new and young and growing companies, of course. Most of the Fortune 500 companies began as small firms. Part of the reason for rising turnover is undoubtedly related to the greater role that younger companies have

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<sup>81</sup> Calculated from the Census Bureau’s Business Dynamics Statistics. The precise numbers are 20.79 percent in 1982 and 12.55 percent in 2009. These figures include age 0 companies—when these are excluded, restricting the sample to firms ages one through five, the shares are 16.98 percent and 10.51 percent, respectively.

<sup>82</sup> Steven J. Davis, *et al*, “Volatility and Dispersion in Business Growth Rates: Publicly Traded versus Privately Held Firms,” in Daron Acemoglu, *et al* (eds.), *NBER Macroeconomics Annual 2006* (2007) p. 107.

<sup>83</sup> Scott D. Anthony and Clayton M. Christensen, “The Empires Strike Back,” *Technology Review*, January/February 2012, p. 66. See also Rajesh K. Chandy and Gerard J. Tellis, “The Incumbent’s Curse? Incumbency, Size, and Radical Product Innovation,” *Journal of Marketing*, July 2000, p. 1.

<sup>84</sup> We are grateful to Philip Delves Broughton for making this point clear to us.

<sup>85</sup> And it wasn’t accompanied by honesty either: “From 1997 to 2002, roughly 1,000 companies would be forced to admit that the earnings that they had reported were not quite correct.” A study in 2001 found that operating earnings for the S&P 500 had been exaggerated for twenty years, by as much as 20 percent in the late 1990s. See Maggie Mahar, *Bull! A History of the Boom and Bust, 1982-2004* (2003), p. 272.

<sup>86</sup> Steven J. Davis and James A. Kahn, “Interpreting the Great Moderation: Changes in the Volatility of Economic Activity at the Macro and Micro Levels,” *Journal of Economic Perspectives*, vol. 22, Fall 2008, p. 155.

played in the U.S. economy over the past three decades, challenging incumbent firms. And, of course, there is a symbiotic relationship between young firms and large, established corporations. Many startups find their first customers in big companies, and many of the ideas coming out of large firms would not otherwise find commercial potential without entrepreneurs. Turnover among America's largest public companies—whether rising or falling, whether relative or absolute—only underscores the resilience of giant corporations and their essential role in economic growth.

Finally, Fortune 500 turnover and the trends and developments related to it are one more example of how mind-bendingly and marvelously complex the world of capitalism can be, with not only constant churn in terms of entry and exit but also combinations, divestitures, cosmetic alterations (name changes), strategic shifts, break-ups, acquisitions, and so on. This reality goes far deeper than what we can glean from aggregate numbers, and in their work, economists do not always convey this complexity. Those in the midst of it—managers, executives, employees, consultants—either do not seek the big picture or are prone to breathless extrapolations of small samples into the latest trends. But, this messiness is where prosperity is made.

## APPENDIX

### Founding Dates of *Fortune* Companies

We must remember that American capitalism did not come into existence in 1955—the initial Fortune 500 list reflected the preceding years of turnover and change, just as the list of 1912 was the outcome of two decades of churn. What passed for relative stability in the 1960s may have simply been another lull between waves of turnover. Still, just as the 1960s witnessed great progress in the service sector, it also was far from a dull decade in terms of future *Fortune* companies.

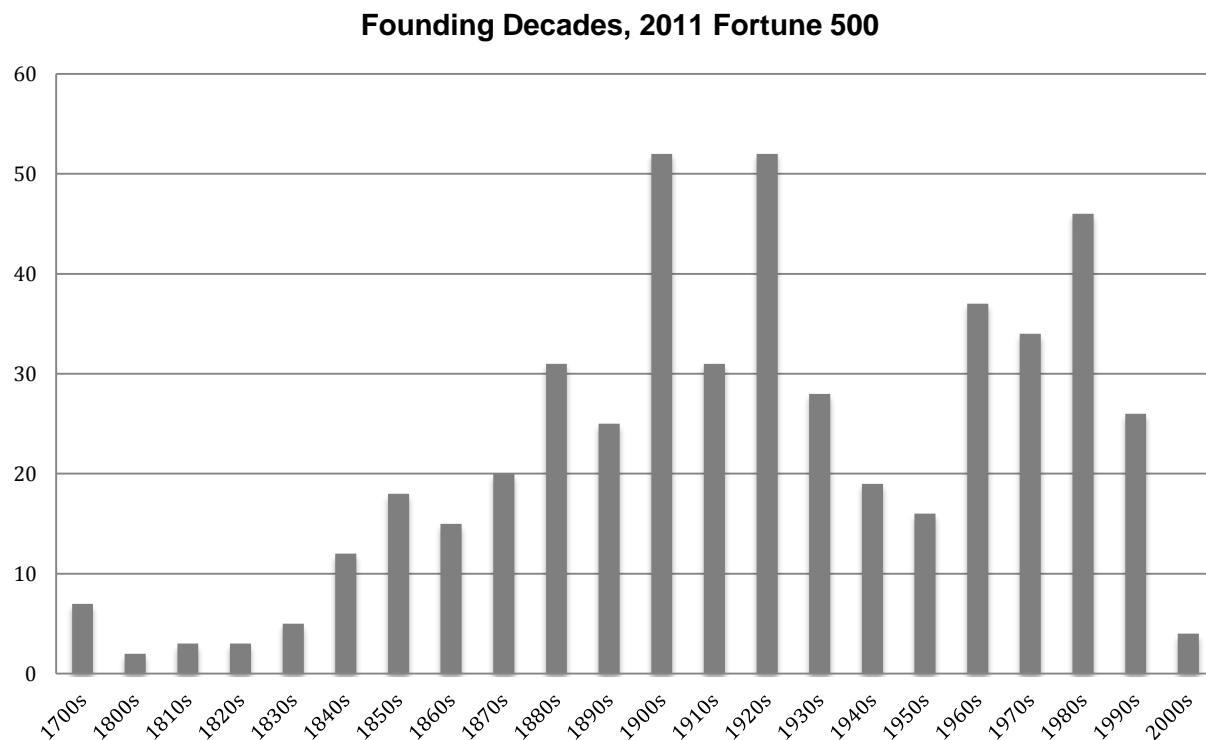


Figure A-1. Source: Authors' calculations from Fortune 500, at <http://money.cnn.com/magazines/fortune/fortune500/2011/index.html>.

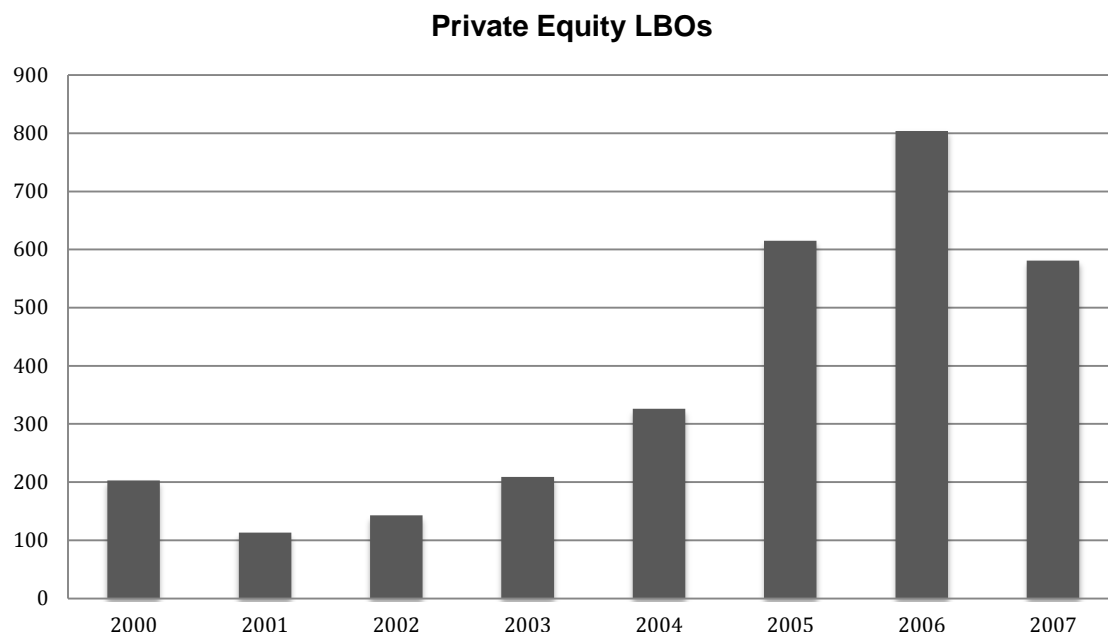
Here we see that two decades during which turnover on the list was relatively quiescent, the 1960s and 1970s, simultaneously saw the provenance of a large number of future Fortune 500 companies. This comparison, in and of itself, tells us nothing—there is likely no causal link we should draw between these numbers.

Turnover among big companies in the United States is sometimes compared to a static situation in Europe: “Eight of the 25 largest firms in the United States in 2003 did not exist or were very small in 1960. All of the largest firms in Europe in 1998 were already large in 1960.”<sup>87</sup> Fair enough, but is 1960 a meaningful year of demarcation? How much

<sup>87</sup> Merritt B. Fox, “Promoting Innovation: The Law of Publicly Traded Corporations,” *Capitalism and Society*, Vol. 5, Issue 3, 2010, p. 1.

earlier were those European firms founded? For context, let's take the entire 2011 *Fortune* list: 70 percent of the companies were founded prior to 1960.

## The Role of Private Equity



**Figure A-2.** Source: U.S. Government Accountability Office, Report to Congressional Requesters, "Private Equity: Recent Growth in Leveraged Buyouts Exposed Risks That Warrant Continued Attention," September 2008, at <http://www.gao.gov/new.items/d08885.pdf>.

We recognize that public-to-private transactions are far from the majority of leveraged buyouts (and these move in waves over time), and that a return to the public markets by LBO firms is far from the most common outcome.<sup>88</sup> Indeed, while going-private transactions were significant in the 1980s, they were almost nonexistent in the 1990s.<sup>89</sup> Not every LBO affects the large public companies ranked by *Fortune*—during this period, public-to-private buyouts were 13 percent of all buyouts but 58 percent of total deal value. But there were likely enough deals to make a difference as to annual *Fortune* list turnover. Reverse LBOs, moreover, also would cause a rise in large-company turnover, and some studies suggested that these “resulted in more companies entering public markets during this period [2000-07] than exiting following private equity acquisitions.”<sup>90</sup>

<sup>88</sup> See Per Strömberg, “The New Demography of Private Equity,” Working Paper, December 2007, at [http://www.sifr.org/PDFs/stromberg\(demography2008\).pdf](http://www.sifr.org/PDFs/stromberg(demography2008).pdf).

<sup>89</sup> Bengt Holmstrom and Steven N. Kaplan, “Corporate Governance and Merger Activity in the United States: Making Sense of the 1980s and 1990s,” *Journal of Economic Perspectives*, Vol. 15, No. 2, Spring 2001, p. 121.

<sup>90</sup> U.S. Government Accountability Office, Report to Congressional Requesters, "Private Equity: Recent Growth in Leveraged Buyouts Exposed Risks That Warrant Continued Attention," September 2008, at <http://www.gao.gov/new.items/d08885.pdf>. Robert Bruner points out, moreover, that the worst M&A deals tend to take place in “hot markets,” so we should expect an impact on volatility among publicly traded firms through this channel as well.

## Initial Public Offerings

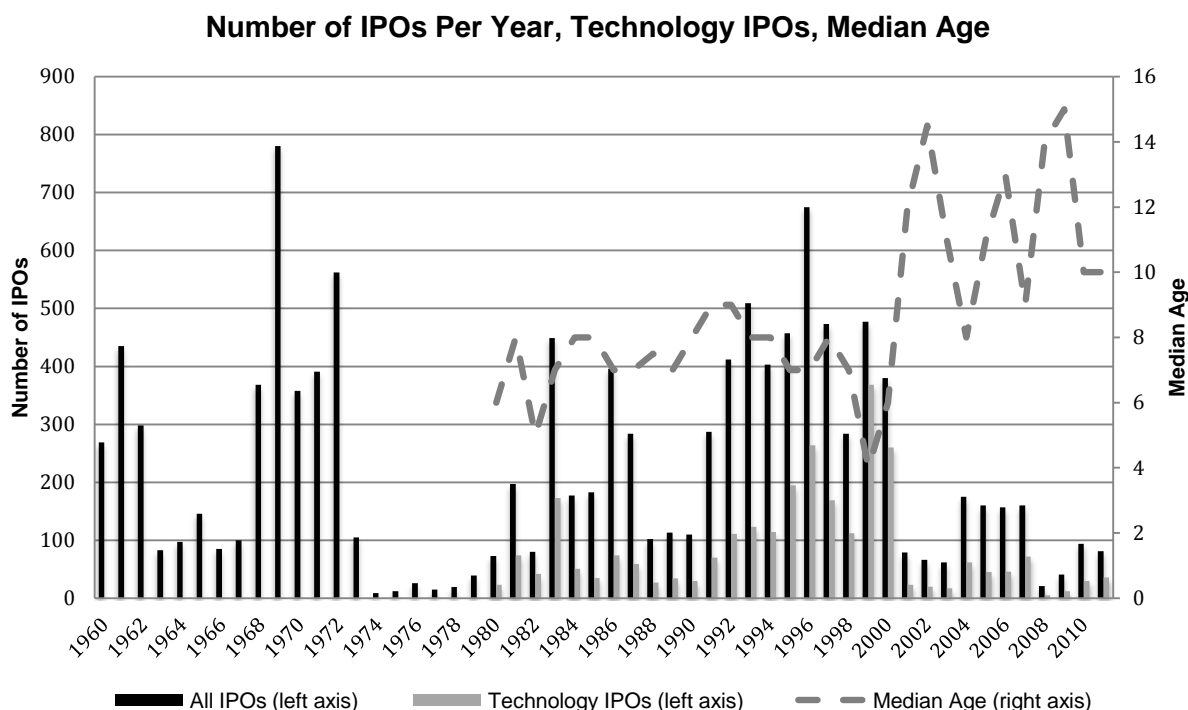
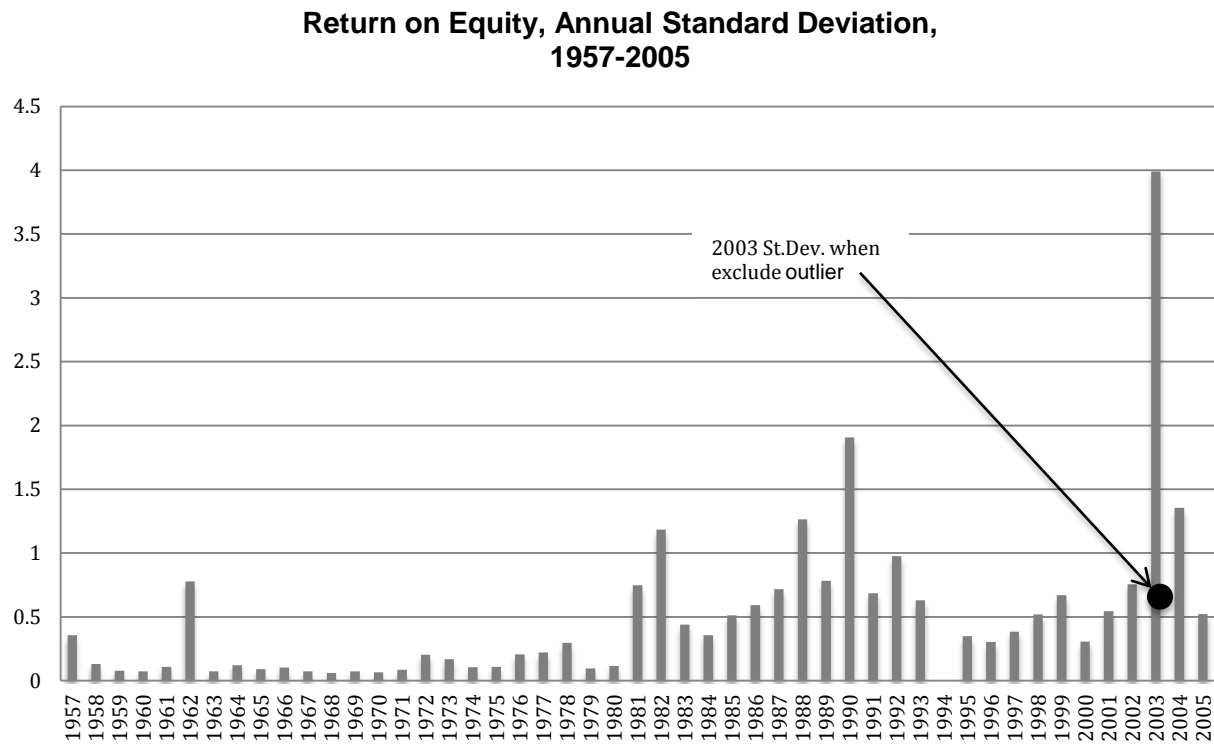


Figure A-3. Source: <http://bear.warrington.ufl.edu/ritter/ipodata.htm>.

Jay Ritter and others have documented that the falloff in IPO activity since 2000 has been due more to lower returns to small company IPOs and a rise in strategic acquisitions rather than regulatory activity.<sup>91</sup>

<sup>91</sup> See Xiaohui Gao, *et al*, "Where Have All the IPOs Gone?" November 2011, at [http://bear.warrington.ufl.edu/ritter/Where%20Have\\_Nov4\\_2011.pdf](http://bear.warrington.ufl.edu/ritter/Where%20Have_Nov4_2011.pdf).

## Return on Equity: Standard Deviation



**Figure A-4.** Standard deviation for each list year of return on equity for Fortune 500. Source: [www.fortune.com](http://www.fortune.com).